

Amendments to the Drawings:

The PTO objected to the previously submitted drawings for not being labeled “Replacement Sheet” or “New Sheet.” Office Action at page 3.

The drawing sheets containing Figures 1-21 are submitted herewith as new formal drawing sheets to be substituted for the previously submitted drawing sheets. They are now correctly labeled as “Replacement Sheet.” No other changes have been made from the immediate prior version of the sheets.

Accordingly, Applicants respectfully request the withdrawal of the objection and consider the newly submitted drawings in the examination of the present application.

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

I. Specification

The PTO has withdrawn the previous objection to the specification for informalities. Office Action at page 2.

II. Claim Status

No claims are requested to be canceled. No claims are being added.

Claims 1 and 5 are currently being amended.

A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After the entry of the amendment as set forth above, claims 1-34 are now pending in this application. Claims 1-3, 5-15, 17-28, and 31 are under examination. Claims 4, 16, 29-30, 32-34 are withdrawn from examination.

Applicants thank the Examiner for the entry of last amendment to claim 4 and the suggestion of a more appropriate identifier. Claim 4 is now identified as “Withdrawn and Previously presented” because of the entry of last amendment.

III. Claim Objections

The PTO has withdrawn the previous objection to claim 12. Office Action at page 2.

The PTO newly objected to claim 5 for the alleged informalities. Office Action at pages 3-4. Applicants have amended claim 5 as suggested.

Accordingly, Applicants respectfully request the reconsideration and withdrawal of this ground of objection.

IV. Claim Rejections under 35 U.S.C. § 112

The PTO rejected claims 1-3, 5-15, 17-28, and 31 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Office Action at page 4.

1. “previously adjusted” in claims 1, 13, 26, and 27

The PTO rejected claims 1, 13, 26, and 27 as allegedly being indefinite for using the phrase “previously adjusted.” Office Action at page 4.

Without any prejudice or disclaimer, Applicants have amended claim 1 to add phrase “responsive to gene expression intensity data subjected to preprocessing to remove background noise and to adjust flag information.” The amended claim 1 makes it clear that the claimed system is supplied with gene expression intensity data which is subjected to previous processing or preprocessing so as to remove background noise and to adjust flag information. Therefore the phrase “previously adjusted” is clearly defined in the amended claim 1.

Regarding claim 23, 26, and 27, Applicants draw the PTO’s attention to the claim language “wherein the gene expression intensity data has been adjusted to remove background noise” in each of the claims. This claim recitation provides antecedent basis for the phrase “previously adjusted.” Therefore, it is clearly defined.

2. “the distortion” in claims 2, 7-8, 10, 14, and 19-20

The PTO rejected claims 2, 7-8, 10, 14, and 19-20 as allegedly being indefinite for using the phrase “the distortion.” According to the PTO, the independent claims which they refer recite both local and global distortions, it is unclear which type of distortion is being analyzed. Office Action at page 4.

Applicants respectfully submit that the phrase “the distortion” in claim 2 specifies a distortion that is caused by using different dyes; the phrase “the distortion” in claims 7 and 8 represents a distortion dependent on a local position; the phrase “the distortion” in claims 10 and 14 is representative of a distortion caused by using different dyes; and the phrase “distortion” in claims 19 and 20 is representative of a distortion dependent on a local position. They believe that the context of each claim provides basis for the aforementioned meaning of the phrase “the distortion.”

3. “the order statistics” in claims 3, 15, 28, 31

The PTO rejected claims 3, 15, 28, and 31 as allegedly being indefinite for using the phrase “the order statistics.” Accordingly to the PTO, there is insufficient antecedent basis for this claim limitation in each of the aforementioned claims. Office Action at page 5. Applicants respectfully traverse.

Claim 1 recites “grid-by-grid order statistics.” This provides sufficient antecedent basis for “the order statistics” in claim 3. Similarly, “the order statistics” in claims 15, 28, and 31 have sufficient antecedent basis.

4. “the correction” in claims 11, 24-25

The PTO rejected claims 11 and 24-25 as allegedly being indefinite for using the phrase “the correction.” Office Action at page 5.

Applicants respectfully submit that “the correction” in these claims does not represent correction in either the first correction means or the second correction means but specifies correction in a whole of the cDNA microarray correction system.

For the reasons set forth above, claims 1-3, 5-15, 17-28, and 31 are not indefinite. Accordingly, Applicants respectfully the reconsideration and withdrawal of this ground of rejection.

The PTO rejected claims 1-3, 5-15, 17-28, and 31 under 35 U.S.C. § 112 first paragraph as allegedly lack of enablement. Office Action at page 5. According to the PTO, the present specification does not reasonably provide enablement for the S-D transformations which result in the plots generated in the instant application. Applicants respectfully traverse.

Applicants draw the PTO’s attention to Figs. 9, 18, and 21. All of these figures have an abscissa representative of a logarithmic sum of channels (CH1) and (CH2) and an ordinate representative of a logarithmic difference of channels (CH1) and (CH2). This shows that the S-D transformations might mean sum-difference transformations. At any rate, the S-D transformations are similar to an MA plot that is mentioned in Yang et al. (see “Statistical methods” on page 2) but are not always identical with the latter.

Specifically, the MA plot is specified by an ordinate and an abscissa that represent $M = \log_2 R/G$ and $A = \log_2 \sqrt{R \times G}$, respectively, as illustrated in Figs. 1, 3, and 4 in Yang et al. Herein, M and A can be rewritten into $(\log_2 R) - (\log_2 G)$ and $(1/2)(\log_2 R + \log_2 G)$, respectively. From this fact, one skilled in the art may understand that the abscissa A in the MA plot represents an average of the logarithmic sum and is different from the abscissa (the sum) in the S-D transformations. In this connection, when two variables are independent of each other and show normal distributions, the variables would be distributed in a circular shape in the S-D transformations but would be spread in an oval shape in the MA plot, although the S-D transformations might not be exactly the same as the MA plot.

For the reasons above, one skilled in the art could practice the present invention under the guidance in the present specification coupled with what is known in the art. Accordingly, Applicants respectfully request the reconsideration and withdrawal of this ground of rejection.

V. Claim Rejections under 35 U.S.C. § 102

The PTO has withdrawn the rejections to claims 1, 2, 6, 13-14, and 26-27 under 35 U.S.C. § 102(b) as allegedly being anticipated by Yang et al. Office Action at page 8.

VI. Claim Rejections under 35 U.S.C. § 103

The PTO rejected claims 1-2, 13-14, and 26-27 under 35 U.S.C. § 103 as being allegedly unpatentable over Yang et al in view of Weng. Office Action at page 9. Applicants respectfully traverse.

The present invention is completely different from Yang et al in view of using the sum and the difference of gene expression intensities between channels (CH1) and (CH2) (see page 15, lines 17 to 20 of the instant specification), although the present invention uses the S-D transformations similar to the MA plot described in Yang et al.

As shown in the instant specification, the present invention can correct a distortion dependent on coordinate positions of grids, as emphasized in the instant specification.

On the other hand, in Yang et al. correction is made about a distortion caused only by different dyes used in common to grids, without considering positions on each grid. Yang et al. discloses image processing for processing a pair of 16-bit images (page 2, “image processing”). Main quantities of interest are produced by image analysis methods (segmentation and background correction) and are (R,G) fluorescence intensity pairs for each gene on each array (where R=red for Cy5 and G=green for Cy3). The (R,G) fluorescence intensity pairs might be pixels.

From this fact, one of ordinary skilled in the art would readily understand that no consideration is made at all in Yang et al about a distortion dependent on coordinate positions between grids and that such a distortion dependent on the coordinate positions is never corrected in Yang et al.

Moreover, the references do not provide any suggestion or motivation that would lead one skilled in the art to combine Yang and Weng to arrive at the presently claimed invention.

For the reasons set forth above, the presently claimed invention is not obvious over Yang in view of Weng. Accordingly, Applicants respectfully request the reconsideration and withdrawal of this ground of rejection.

CONCLUSION

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By 

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 954-6014
Facsimile: (202) 672-5399

George Beck
Attorney for Applicants
Registration No. 38,072